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AUTHOR Lin, Sheila Seubold; Cliver, Pamela
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ABSTRACT

This research project focuses on the socialization of young women, and whether that socialization is affected by the sex of the siblings with whom a girl is reared. Specifically, it is argued that sex role differentiation will be stronger when the family includes both male and female children. Subjects were 939 women, 14 to 24 years of age, who were surveyed for the National Longitudinal Study of the Labor Market Experience of Young Women. Subjects were interviewed in 1968 and re-interviewed in each of the next four years (1969-1972). Socialization effects were examined in terms of two factors: the subject's own educational aspirations as reported at two points in time (1969 and 1972), and her reports of her parents' goal for her education and the amount of encouragement they gave her to pursue post-high school education. Respondents were also asked about their total number of siblings, their birth order, and the siblings' ages and educational attainment. Subjects were classified into four categories: Only Child, Sisters Only, 1+ Brothers, or Unknown. Results indicated weak confirmation of the hypothesis. (Author/SS)

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THE ABSENT BROTHER:[1]
THE EFFECT OF SEX OF SIBLINGS ON ASPIRATIONS AND PARENTAL ENCOURAGEMENT OF YOUNG WOMEN

Sheila Seubold Lin
Urban Studies Center
University of Louisville

Pamela Oliver
Sociology Department
University of Louisvilld

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It is well established that male and female children are socialized differently in traditional American culture. This differential socialization with regard to sex manifests itself in traditional male and female roles. This research project focuses on the socialization of young women, and asks whether that socialization is affected by the sex of the siblings a girl is reared with. Specificially, it is argued that sex role differentiation will be stronger when the family includes both male and female children. Or, rather, since the overwhelming majority of families of young women include brothers, it is perhaps better to turn this statement around, and argue that females will be less subject to the effects of "traditional" sex-role socialization when they are reared without brothers.

Most research on the effect of sibling structure on socialization has focused on birth order effects. Within this framework, it has been noted occasionally that the consequences of a particular birth order position depend in part upon whether older (or younger) children are the same or different sex as the child in question.[2] Relatively few studies have examined the effects of birth order and sex of siblings on the adult outcomes of socialization processes, although there is a substantial literature examining the differences between men and women in educational aspirations.[3]

One study which deals specifically with sex of siblings as an explanation of women's achievement was conducted by Padan-Eisenstark (1972) on an Israeli sample of professional women. Padan-Eisenstark tested the hypothesis that "Women raised in homogeneous sibling groups composed of girls only are overrepresented among career women in high status positions, while those raised in heterogeneous sibling groups composed of both sexes are underrepresented among them." (: 552) This hypothesis was not confirmed: females from female-only households were not more likely to be found in the high-status occupations. This negative finding is far from conclusive, however, since it focuses on a few high-status occupations, was based on a mailed questionnaire with a rather low (50%) return rate, and is possibly an artifact due to the low frequency of homogeneous sibling groups.

It is certainly reasonable to suppose that the presence or absence of brothers in a girl's sibling group would affect her socialization and thus her educational aspirations. We propose to test this supposition on a large probability sample using careful modes of analysis which control for extraneous factors.

Data

Subjects for this research are 5159 women aged 14-24 in 1968 who were surveyed for the National Longitudinal Study of the Labor Market Experience of Young Women (NLS). The NLS is funded by the U.S. Department of Labor and is designed and implemented by Ohio State University and the U.S. Bureau of the Census. These subjects were contacted for re-interviews in each of the next four years, 1969-1972. Sample retention was quite good: by 1972, 90% of the original sample remained. Variables used in this analysis were collected in different years. The sample analyzed is attenuated to 939 due to the lack of information about sex of siblings for over half the sample, and

the decision to restrict analysis to small families. These considerations will be explained below.

Dependent Variables: Parental Encouragement and Educational Aspirations

Educational aspirations are an important factor in the achievement of young women, so we have chosen to focus on them as our dependent variable. We examine two distinct types of factors, the young woman's own educational aspirations as reported at two points in time (1969 and 1972), and her reports of her parents' goal for her education and the amount of encouragement they gave her to pursue post-high school education.

Educational Goal. In each year from 1969 to 1972, subjects were asked how many years of education they wished to obtain. Their responses were coded in years, with 12 representing high school graduation, 14 representing a one- or two- year college degree, 16 representing college graduation, 17 representing a master's degree, and 18 representing any type of doctorate. Available response categories varied slightly from year to year, especially on the low end of the scale, so all respondents who did not wish to attend high school were classified into category 9 to make each year's answers comparable. For this report, we analyzed data from 1969 and 1972, the first and last years for which we have information.

Parents' Goal: College or Not. In 1972, subjects were asked to state how many years of education their parents had wanted them to obtain when they (the subjects) were 14. Responses were originally recorded in the same categories as for educational goal, but since the overwhelming majority were recorded as 12 or 16, this variable was recoded as a dichotomy according to whether the parents wanted their daughter to go to college at all, or not. Clearly the intent of the reference to age 14 was to refer to

a constant point in the life cycle regardless of the woman's age at the time the question was asked. The question is difficult for the respondent to answer accurately, since it calls for recall of parental attitudes at some specific past time. Neverthelss, responses ought to give a general idea of whether the woman was reared with the idea that her parents wanted her to go to college.

Parental Encouragement Index. In 1971, subjects were asked to give one of three responses (much, some, none) to each of three questions concerning parental encouragement to pursue education past high school: mother's encouragement, father's encouragement, and expectation of parental help. With each variable coded 3, 2, or 1 for much, some or none, respectively, the means and standard deviations for the variables were similar, so they were summed without standardization to form a composite index, since minor variations in the weights assigned to items in a scale produce minimal changes in the scale.

It is important to note that both variables concerning parental encouragement for education concern the young woman's perceptions of her parents' attitudes, not the parents' actual attitudes. So we are testing the prediction that women reared without brothers will believe that their parents encouraged them more to obtain higher education than will women reared with brothers.

Independent Variable: Sex Composition of the Family

The independent variable in this study is conceptually clear, but difficult to study because of problems with the data. Respondents were asked their total number of siblings, their birth order, and such items as the

siblings' ages and educational attainments, but not the sex of their siblings. Information on sex of siblings is available only for those siblings who were living with the respondent in 1968, in which case it was included on the household record card.

Since we did know how many total siblings each subject had, it was possible to use this information plus that given on the household record card to classify each subject into one of four categories: ONLY CHILD, the subject has no siblings; SISTERS ONLY, the subject has only female siblings; 1+ BROTHERS, the subject had one or more male sibling living in her household in 1968; and UNKNOWN, no brothers in the household in 1968, but there are other siblings outside the household unaccounted for. The frequency of each category in the total data set is given in Table 1. All analyses reported in this paper exclude the "unknown" category. Analysis indicates that the "unknowns" are essentially similar to those who are known to have brothers.

Table 2 shows the distribution of Sex of Siblings by Number of Siblings. (Only children are excluded, since they, of course, have zero siblings.) This table is useful for two purposes. First, having only sisters is highly negatively related to the total number of siblings. This means that number of siblings must be controlled in some fashion in the analysis. What we decided to do was to run the analysis only for subjects with 0, 1 or 2 siblings, reasoning that these are all small enough family sizes that the effects of the sheer number of siblings is well-enough controlled. Furthermore, it is only for these small family sizes that a significant proportion (although still a minority) of subjects have no brothers.

The second interesting use of Table 2 is to compare the actual

occurrence of having all sisters in the sample with the expected frequency generated by assuming that the probability that each sibling is female is .5. Comparison of the observed and expected proportions reveals that all-female sibling sets regularly occur less frequently than would be expected by chance. Presumably, parents who have all female children show some tendency to have another child, until they produce at least one son.

There are also a disproportionate number of eldest children from every family size and sex composition, but this is an artifact of the data, since "younger children" who are teenagers or young adults are likely to have siblings who have moved away from home and are thus coded "unknown" on the Sex of Siblings. (The data on birth order by sibling composition is not shown.)

However, this overrepresentation of eldest children plus previous research showing birth order effects on aspirations requires that birth order be controlled to identify pure effects of sex of siblings. This is done by creating a composite variable with five categories: only child; eldest child with sisters only; eldest child with one or more brothers; younger child with sisters only; and younger child with one or more brothers.

Control Variables: Race and SES

We are primarily interested in the effect of the family structure on educational aspirations, but it is necessary to control for factors which we know obviously have an effect on educational aspirations. One such factor must be the class background of the family. Since we are concerned with controlling for the economic class of the family, and not with identifying the distinct effects of each parent's education, income, and so forth,

we have controlled for class with an SES index which takes into account parental education, income, occupational prestige, and other family characteristics.

Another factor known to affect educational aspirations is race. Race was originally coded as white, black, and other. Since there are only a handfull of "others" in the sample, they are combined with blacks in the analysis. Preliminary runs revealed some interactions between race and sibling structure were significant, so model coefficients are reported separately for whites and non-whites.

Mode of Analysis

The approach of our analysis is essentially a general linear model in which categorical independent variables are treated as sets of dummy variables. For clarity of presentation we have employed a Multiple Classificational Analysis, which is algebraically equivalent to dummy variable regression, but presents coefficients in the form of deviations from the grand mean, a form which is easier to interpret. The cardinal variable SES is treated as a covariate whose effect is entered prior to the sibling variable. That is, sex of siblings is allowed to explain only that variance which SES cannot explain. The significance levels from an analysis of variance and comparisons of R^2's allow an assessment of the importance of each variable.

Results

Tables 3 and 4 show the effects of sex of siblings and sex of siblings plus birth order on each of the for dependent variables, separately for whites and blacks. Inspection of the adjusted deviation scores for

whites shows weak confirmation of the hypothesis. In all instances (except younger children from 1969 educational goal) women with only sisters have higher aspirations and report higher parental aspirations and encouragement than women with brothers. The analysis of variance indicates that the effect of sex of siblings on the parental encouragement index is not significant, while for the other three variables there is a high probability that sex of siblings does have an effect on the dependent variable, although this probability is not as great as the usual conservative standard of the .05 level of significance.

For whites, examination of the changes in R^2 yields a similar sort of conclusion. The sibling structure has an effect, but it is extremely small, accounting for less than 1% of the variance in each dependent variable.

Again for whites, sex of siblings and birth order have differing impacts in interaction on the different variables. For the woman's own educational aspirations, eldest children with only sisters have very high aspirations, followed by eldest children with brothers, and with younger children and only children having lower aspirations. But for parents' goal and parental encouragement, it is the younger children with only sisters who report the highest parental aspirations. Here, only children report parental aspirations comparable to younger children with only sisters, with those having brothers reporting the lowest parental aspirations. For parents' aspirations, the sex of the siblings appears to be more important than birth order.

The picture is very different for non-whites (who are mostly black). For one thing, the pattern of results is more mixed, which may be partly due to the much smaller sample size. But, in general, the women's own

aspirations exhibit a pattern opposite to that predicted: women with only sisters have lower aspirations than those with brothers. On the other hand, their reports of their parents' attitudes generally confirm the predictions: women reared with brothers report lower parental aspirations and encouragement than those reared with only sisters. Similarly to whites, only children show inconsistent patterns, sometimes being the highest group, and sometimes the lowest. The interactive effects of sex of siblings and birth order are simply mixed, differing from variable to variable. Sample sizes are so small that firm generalizations are unwarranted.

Conclusions

Despite the obvious weakness of the observed relationships, it should be recalled that the hypothesis that women reared without brothers would experience higher educational aspirations than women reared with brothers was stated a priori. Although the data clearly cannot support firm conclusions, we believe that there is some small support for the idea that the sex composition of sibling sets influences the socialization experiences of young women. If there truly is such an effect, even a small one, it will come to have greater and greater impact, as the reduction of family sizes (i.e. the number of children each woman bears) will necessarily produce a greater frequency of sex-homogeneous sibling sets. The median subject in these data came from a 4-child family. Two-child families, which are becoming more and more common, have a 50-50 chance of being sex homogeneous.

Thus, even though these data are not conclusive, we believe it is important to test our hypothesis further on other samples. At this time, we offer the tentative assertion that being raised with only sisters has a salutary effect on girls' socialization toward educational achievement.

FOOTNOTES

1. A previous draft of this paper was Lin's undergraduate honor's thesis under the direction of Oliver. The authors wish to thank J.H. Rieger for making the data available for this project.

2. For reviews of this literature, see Forner and Still (1976), Forner (1969), and Sutton-Smith and Rosenberg (1971).

3. For example, see Alexander (1974), Featherman and Hauser (1976), Hout and Morgan (1975), Marini (1978), McClendon (1976), Rosen and Aneschensel (1978).

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TABLE 2. SIBLING STRUCTURE BY RACE.

	NONWHITE		WHITE	
SEX OF SIBLINGS	f	%	f	%
Only Child.	56	6%	243	13%
Sisters Only	49	5	274	14
1+ Brothers in Household	811	89	1382	73
TOTAL KNOWN	916	100%	1899	100%

SEX OF SIBLING + BIRTH ORDER	NONWHITE		WHITE	
	f	%	f	%
Only Child	55	6%	240	13%
Eldest Child				
Sisters Only	34	4	175	9
1+ Brothers	188	21	494	26
Younger Child				
Sisters Only	15	2	99	5
1+ Brothers	609	68%	884	44
TOTAL KNOWN	901	101%*	1892	100%

* rounding error

TABLE 2. CROSSTABULATION OF SEX OF SIBLING BY NUMBER OF SIBLINGS COMPARED WITH DISTRIBUTION EXPECTED UNDER ASSUMPTION THAT EACH SIBLING'S SEX WAS RANDOMLY DETERMINED (FOR WOMEN WITH ONE OR MORE SIBLINGS)

SIBLINGS NUMBER	FREQUENCIES*				PROPORTIONS				TOTAL KNOWN	UNKNOWN	
	SISTERS ONLY		1+ BROTHERS		SISTERS ONLY		1+ BROTHERS				
	observed	expected	observed	expected	observed	expected	observed	expected		frequency	proportion of total
1	181	200	218	200	.46	.50	.55	.50	399	513	.56
2	86	114	371	343	.19	.25	.81	.75	457	481	.51
3	44	55	397	386	.10	.125	.90	.875	441	415	.49
4	8	22	344	330	.02	.062	.98	.938	352	252	.42
5	1	.7	221	215	.0045	.03	.9955	.97	222	194	.47
6	3	3	188	188	.016	.016	.984	.984	191	152	.44
7	0	1	147	146	.000	.008	1.00	.99	147	116	.44
8	0	0	123	122.5	.000	.004	1.00	.995	123	63	.34
9	0	0	60	60	0	.002	1.0	.998	60	112	.65
10	0	0	54	54	0	.001	1.0	.999	54	4	.07
11	0	0	23	23	0	.000	1.0	1.0	23	2	.08
12	0	0	32	32	0	0	1.0	1.0	32	0	0
13	0	0	6	6	0	0	1.0	1.0	6	0	0
14	0	0	1	1	0	0	1.0	1.0	1	0	0
15	0	0	7	7	0	0	1.0	1.0	7	0	0
16	0	0	1	1	0	0	1.0	1.0	1	0	0

$\chi^2 = 30.9235$

for df = 8 (rows where expected sisters only > 1), $p < .001$

for df = 15 (all cells), $p < .01$

TABLE 3. Effect of Sibling Structure on Four Educational Aspiration Variables, Controlling For SES For WHITES WITH 0, 1, OR 2 SIBLINGS.

	DEPENDENT VARIABLES			
	Own Educational Goal		Parents' Attitudes	
	1969	1972	Goal College	Encouragement Index
GRAND MEAN	14.57	14.47	.66	7.07
DEVIATIONS FROM MEAN ADJUSTED FOR SES				
Grouped by Sex of Siblings				
Only Child	- .24	- .11	.01	.04
Sisters Only	.17	.28	.06	.17
1+ Brothers	.03	- .08	- .03	- .09
Grouped by Birth Order and Sex of Siblings				
Only Child	- .23	- .10	.01	.06
Eldest Child				
Sisters Only	.29	.44	.05	.09
1+ Brothers	.05	.07	- .02	- .05
Younger Child				
Sisters Only	- .08	- .02	.09	.27
1+ Brothers	- .00	- .23	- .04	- .14
SIGNIFICANCE LEVEL (ANOVA)				
SES	.000	.000	.006	.000
Sex of Siblings	.092	.080	.041	.260
Sex of Siblings + Birth Order	.181	.045	.133	.510
R^2				
SES	.222	.212	.212	.181
SES + Sex of Siblings	.226	.217	.219	.184
SES + Sex of Siblings + Birth Order	.229	.222	.226	.189
R^2 CHANGE				
for Sex of Siblings	.004	.005	.007	.003
for Birth Order	.003	.005	.001	.005

TABLE 4. Effect of Sibling Structure on Four Educational Aspiration Variables, Controlling for SES For NON-WHITES with 0, 1, or 2 Siblings

	DEPENDENT VARIABLES			
	Own Educational Goal		Parents' Attitudes	
	1969	1972	Goal College	Encouragement Index
GRAND MEAN	14.61	14.58	.64	6.44
DEVIATIONS FROM MEAN ADJUSTED FOR SES				
Grouped by Sex of Siblings				
Only Child	.51	.21	.11	−.20
Sisters Only	−.77	−.36	−.00	.25
1+ Brothers	.14	.08	−.05	−.03
Grouped by Birth Order and Sex of Siblings				
Only Child	.51	.21	.11	−.21
Eldest Child				
Sisters Only	−.88	−.42	.00	.02
1+ Brothers	−.06	.29	−.05	.35
Younger Child				
Sisters Only	−.40	−.18	−.03	1.00
1+ Brothers	.35	−.14	−.04	−.46
SIGNIFICANCE LEVEL (ANOVA)				
SES	.000	.000	.000	.000
Sex of Siblings	.024	.505	.298	.535
Sex of Siblings + Birth Order	.073	.712	.657	.120
R^2				
SES	.159	.223	.147	.184
SES + Sex of Siblings	.206	.231	.163	.191
SES + Sex of Siblings + Birth Order	.213	.236	.163	.226
R^2 CHANGE				
for Sex of Siblings	.047	.008	.016	.007
for Birth Order	.007	.005	.000	.035

TABLE 1. SIBLING STRUCTURE BY RACE

Sex of Siblings	Nonwhite f	Nonwhite %	White f	White %
Only Child	56	6%	243	13%
Sisters Only	49	5%	274	14%
1 + Brothers in Household	811	89%	1382	73%
Total Known	916	100%	1899	100%

Sex of Sibling and Birth Order	Nonwhite f	Nonwhite %	White f	White %
Only Child	55	6%	240	13%
Eldest Child				
Sisters Only	34	4%	175	9%
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Younger Child				
Sisters Only	15	2%	99	5%
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Total Known	901	101%*	1892	100%

*rounding error

TABLE 2. CROSSTABULATION OF SEX OF SIBLING BY NUMBER OF SIBLINGS COMPARED WITH DISTRIBUTION EXPECTED UNDER ASSUMPTION THAT EACH SIBLING'S SEX WAS RANDOMLY DETERMINED. (FOR WOMEN WITH ONE OR MORE SIBLING)

	FREQUENCIES*				PROPORTIONS					UNKNOWN	
	Sisters Only		1 + Brothers		Sisters Only		1 + Brothers		TOTAL		
SIBLINGS NUMBER	Observed	Expected	Observed	Expected	Observed	Expected	Observed	Expected	KNOWN	Frequency	Proportion of Total
1	181	200	218	200	.45	.50	.55	.50	399	513	.56
2	86	114	371	343	.19	.25	.81	.75	457	481	.51
3	44	55	397	386	.10	.125	.90	.875	441	415	.49
4	8	22	344	330	.02	.062	.98	.938	352	252	.42
5	1	.7	221	215	.0045	.03	.9955	.97	222	194	.47
6	3	3	188	188	.016	.016	.984	.984	191	152	.44
7	0	1	147	146	.000	.008	1.00	.99	147	116	.44
8	0	0	123	122.5	.000	.004	1.00	.995	123	63	.34
9	0	0	60	60	0	.002	1.0	.998	60	112	.65
10	0	0	54	54	0	.001	1.0	.999	54	4	.07
11	0	0	23	23	0	.000	1.0	1.0	23	2	.08
12	0	0	32	32	0	0	1.0	1.0	32	0	0
13	0	0	6	6	0	0	1.0	1.0	6	0	0
14	0	0	1	1	0	0	1.0	1.0	1	0	0
15	0	0	7	7	0	0	1.0	1.0	7	0	0
16	0	0	1	1	0	0	1.0	1.0	1	0	0

$X^2 = 30.9235$
for df = 8 (rows where expected sisters only > 1), $p < .001$
for df = 15 (all cells), $p < .01$

TABLE 3. Effect of Sibling Structure on Four Educational Aspiration Variables, Controlling for SES. For WHITES with 0, 1, or 2 Siblings.

	DEPENDENT VARIABLES			
	Own Educational Goal		Parents' Attitudes	
	1969	1972	Goal College	Encouragement Index
GRAND MEAN	14.57	14.47	.66	7.07
DEVIATIONS FROM MEAN ADJUSTED FOR SES				
Grouped by Sex of Siblings				
Only Child	-.24	-.11	.01	.04
Sisters Only	.17	.28	.06	.17
1+ Brothers	.03	-.08	-.03	-.09
Grouped by Birth Order and Sex of Siblings				
Only Child	-.23	-.10	.01	.06
Eldest Child				
Sisters Only	.29	.44	.05	.09
1+ Brothers	.05	.07	.02	.05
Younger Child				
Sisters Only	-.08	-.02	.09	.27
1+ Brothers	-.00	-.23	-.04	-.14
SIGNIFICANCE LEVEL (ANOVA)				
SES	.000	.000	-.000	.000
Sex of Siblings	.092	.080	.041	.260
Sex of Siblings + Birth Order	.181	.045	.133	.510
R^2				
SES	.222	.212	.212	.181
SES + Sex of Siblings	.226	.217	.219	.184
SES + Sex of Siblings + Birth Order	.229	.222	.220	.189
R^2 Change				
For Sex of Siblings	.004	.005	.007	.003
For Birth Order	.003	.005	.001	.005

TABLE 4. Effect of Sibling Structure on Four Educational Aspiration Variables, Controlling for SES. For NONWHITES with 0, 1, or 2 Siblings.

	DEPENDENT VARIABLES			
	Own Educational Goal		Parents' Attitudes	
	1969	1972	Goal College	Encouragement Index
GRAND MEAN	14.61	14.58	.64	6.44
DEVIATIONS FROM MEAN ADJUSTED FOR SES				
Grouped by Sex of Siblings				
Only Child	.51	.21	.11	-.20
Sisters Only	-.77	-.36	-.00	.25
1+ Brothers	.14	.08	-.05	-.03
Grouped by Birth Order and Sex of Siblings				
Only Child	.51	.21	.11	-.21
Eldest Child				
Sisters Only	-.88	-.42	.00	.02
1+ Brothers	-.06	.29	-.05	.35
Younger Child				
Sisters Only	-.40	-.18	-.03	1.00
1+ Brothers	.35	-.14	-.04	-.46
SIGNIFICANCE LEVEL (ANOVA)				
SES	.000	.000	-.000	.000
Sex of Siblings	.024	.505	.298	.535
Sex of Siblings + Birth Order	.073	.712	.657	.120
R^2				
SES	.159	.223	.147	.184
SES + Sex of Siblings	.206	.231	.163	.191
SES + Sex of Siblings + Birth Order	.213	.236	.163	.226
R^2 Change				
For Sex of Siblings	.047	.008	.016	.007
For Birth Order	.007	.005	.000	.035